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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,019	02/03/2004	Kevin Carpenter	AUT5428.01A	5345

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JOHN P. O'BANION
O'BANION & RITCHEY LLP
400 CAPITOL MALL SUITE 1550
SACRAMENTO, CA 95814

EXAMINER

NATALINI, JEFF WILLIAM

ART UNIT PAPER NUMBER

2858

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10772.019

[illegible]

CARPENTER, KEVIN

Examiner

Jeff Natalini

Art Unit

2858

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 32-41 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 32, 33 and 36-41 is/are rejected.
- 7) ☒ Claim(s) 34 and 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 40 is rejected under 35 U.S.C. 102(b) as being anticipated by Needle et al. (6323654).

Needle et al. discloses a current source for producing a continuous source of a substantially fixed current flow into a wiring circuit under test (abstract, current (pulse) is fixed until change in the detector is detected, which the current will be changed), for producing current configured for establishing an electrical connection to the wiring circuit anywhere along the length of the wiring circuit (col 5 line 20-23; first position is broadly interpreted as being located anywhere); a detector (col 2 line 25-30; fig 2 (205)) for generating an output signal in response to detecting an resistance change in the wiring circuit by at least a predetermined amount at a sufficient rate of change (col 2 line 27-32); and an annunciator circuit for audibly indicating a sudden change (the tone heard changes as the impedance changes then will hold until another change is detected; col 2 line 45-49) in circuit resistance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-9, and 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Needle et al. (6323654).

In regard to claim 1, Needle et al. discloses means for producing a continuous source of a substantially fixed current flow into a wiring circuit under test (abstract, current (pulse) is fixed until change in the detector is detected, which the current will be changed), said means for producing current configured for establishing an electrical connection to the wiring circuit anywhere along the length of the wiring circuit (col 5 line 20-23; first position is broadly interpreted as being located anywhere); means for continuously monitoring changes across said circuit under test (col 2 line 25-30; fig 2 (205)); and means for audibly indicating a sudden change (the tone heard changes as the impedance changes then will hold until another change is detected; col 2 line 45-49) in circuit conductance/resistance in relation to a preceding value of conductance and not a fixed value of conductance (col 2 line 27-32).

Needle et al. lacks specifically stating that the voltage is monitored, but it would be obvious to one of ordinary skill that in producing a current (pulse), and determining any impedance changes, that since $V = I \cdot R$, and since the current is fixed, by monitoring the impedance the voltage would be a known value.

In regard to claims 3 and 4, Needle et al. lacks wherein said means for producing a continuous source of fixed current is configured for generating a current exceeding one ampere and more specifically within the range of .5 amperes to ten amperes.

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Needle et al. to produce a fixed current in the range of 1-10 amperes as taught by MPEP 2144.05 IIB states that a particular parameter must first be recognized as a result effective variable, i.e., a variable which achieves a recognizable result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

In regard to claim 5 and 6, Needle et al. discloses wherein the means for continuously monitoring the voltage (disclosed above the similarities between impedance/voltage) comprising a detector that will detect an output signal in response to a significant change in voltage that are in response to conductance changes in the circuit in a sufficiently short period of time (col 2 line 25-39).

In regard to claims 7 and 8, Needle et al. lacks specifically wherein the voltage change is within the range of approximately .2 volts to 1.0 volts and more specifically is in the range of approximately .4 volts to .7 volts.

It would have been obvious to one with ordinary skill in the art at the time the invention was made to understand that small variations in voltage sometimes happen and don't necessarily mean there is a fault in the circuit as well as sometimes large quick variations in voltage happen that are not dangerous, so it would be wise to set a limit within the range of .2 V to 1.0 V for a voltage change to generate an output signal because MPEP 2144.05 IIB states that a particular parameter must first be recognized as a result effective variable, i.e., a variable which achieves a recognizable result,

before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

In regard to claim 9, Needle et al. discloses means for indicating a sudden rise in circuit voltage (if the impedance increases, the voltage increases and this is one of the conditions detected; col 2 line 25-31) comprises an audio annunciated coupled ("tone generator" not specifically shown in figures, but would be coupled to the device in order to produce the proper audio output) to said voltage monitoring means and configured to produce an audio output in response to said sudden change (col 2 line 45-49) wherein sudden voltage rise is sensed in response to a detection of voltage which exceeds the former value by at least a predetermined amount to trigger the detection (col 2 line 27-28, only a "significant change" is so a small change, under a certain amount would be ignored).

In regard to claim 36-39, Needle et al. discloses wherein means comprises an audio buzzer device (tone generator, single tone is a buzz sound) configured to generate a fixed duration audio output in response to detecting said sudden conductance changes that occur singly (col 2 line 45-49, col 2 line 35-39; the output tone will last until another change is detected), wherein the circuit extends the fixed duration in response to repeated changes in conductance (the tone generator will produce an audio signal in a different tone for each change (col 2 line 35-39) until a signal is not picked up (col 1 line 22-30).

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Needle et al. (6323654) in view of Talbot et al. (5144225).

Needle et al. lacks wherein said means for producing a continuous source of fixed current comprises a reference circuit coupled to a control circuit having a feedback loop for maintaining a selected output current over a range of conductance for said circuit under test.

Talbot et al. discloses a reference circuit (fig 12 (320 and elements surrounding the area)) coupled to a control circuit (338) having a feedback loop (330) for maintaining a selected output current over a range of conductance for said circuit under test (col 11 line 1-17).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Needle et al. to have a reference circuit coupled to a control circuit having a feedback loop for maintaining a selected output current as disclosed by Talbot et al. in order to maintain a constant voltage across the circuit (col 11 line 16-17; this would be similar to the instant invention as the voltage should be constant until a fault is present).

6. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Needle et al. (6323654) in view of McIntyre (5905439).

Needle et al. lacks wherein said means for producing a continuous source of fixed current is configured for generating a current exceeding one ampere and more specifically within the range of .5 amperes to ten amperes.

McIntyre discloses an apparatus wherein loads are monitored during operation and they each draw one ampere during normal operation (col 3 line 30-32).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Needle et al. to produce a fixed current of one ampere (in range of .5-10 amperes), to provide normal current to the load as taught by McIntyre so that the threshold can be set to determine errors (col 3 line 33-40).

7. Claims 10, 32, 33, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Needle et al. (6323654) in view of Masia et al. (5382909).

In regard to claims 10, 32, and 33, Needle et al. lacks specifically stating that the amount of current output by the continuous source of output current is able to be adjustably selected by the user from multiple currents, so the output current is at or below a maximum current.

Masia et al. discloses in a fault detection apparatus that a fixed current source is able to be adjusted from different values to a desired (a value that would be below the maximum value) and known value (col 15 line 3-6).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Needle et al. to be able to adjust the current source to a desired and known value as taught by Masia et al. in order to have improved accuracy in fault detection (col 15 line 6-7).

In regard to claim 41, Needle et al. discloses a power supply configured to supply operating and drive current (not shown, but as known the system would run on a battery

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or be plugged into a wall outlet); a voltage reference circuit (fig 3 (304)); a current driver for producing a continuous source of a substantially fixed current flow into a wiring circuit under test (abstract, current (pulse) is fixed until change in the detector is detected, which the current will be changed), said means for producing current configured for establishing an electrical connection to the wiring circuit anywhere along the length of the wiring circuit with two output connections (fig 3 (305-test leads); col 5 line 20-23 - first position is broadly interpreted as being located anywhere); a sensing circuit for continuously monitoring changes across said circuit under test (col 2 line 25-30; fig 2 (205)); and an annunciator (tone generator) coupled to the circuit for audibly indicating a sudden change (the tone heard changes as the impedance changes then will hold until another change is detected; col 2 line 45-49) in circuit voltage/resistance in relation to a preceding value of by at least a predetermined value at a sufficient rate of increase (col 2 line 27-32).

Needle et al. lacks a selector coupled to the voltage reference circuit configured for user selection of an output current, which is in the range of .5 ampere to ten amperes which is suitable for testing the voltage under test.

Masia et al. discloses in a fault detection apparatus that a fixed current source is able to be adjusted from different values to a desired (a value that would be below the maximum value) and known value (col 15 line 3-6).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Needle et al. to be able to adjust the current source to a desired

and known value as taught by Masia et al. in order to have improved accuracy in fault detection (col 15 line 6-7).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Needle et al. to produce a fixed current in the range of 1-10 amperes as taught by MPEP 2144.05 IIB states that a particular parameter must first be recognized as a result effective variable, i.e., a variable which achieves a recognizable result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

Allowable Subject Matter

8. Claim 34 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art does not disclose or render obvious a comparator circuit adapted to detect a plurality of sudden changes in applied voltage in response to said substantially fixed current flow; a charge storage capacitor coupled to a first input of said comparator circuit configuring said comparator circuit to detect a first direction of voltage change in the wiring circuit in relation to a former voltage level and the combination as claimed.

Claim 35, depends from claim 34 and thus would also be allowable.

Response to Arguments

9. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wissman et al. (5914605) discloses a method for tracing coaxial cables using a transmitter and receiver. Wendel et al. (6922060) applies a direct current to a conductor to detect partial conductor short circuits.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Natalini whose telephone number is 571-272-2266. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeff Natalini


ANJAN DEB
PRIMARY EXAMINER